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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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YOUNG & THOMPSON
745 SOUTH 23RD STREET
2ND FLOOR
ARLINGTON, VA 22202

EXAMINER	
RAMIREZ, JOHN FERNANDO	
ART UNIT	PAPER NUMBER
3737	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/20/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/500,162	GENET ET AL.	
	Examiner	Art Unit	
	John F. Ramirez	3737	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

After a review of applicant's remarks, all necessary changes to the specificacions and the claims have been entered.

In regards to the Notice of Abandonment dated July 21, 2006, the examiner of record has acknowledged of the timely filing of the response filed to the Office Action dated January 10, 2006, therefore withdrawal of the Notice has been made.

Applicant's arguments filed on July 10, 2006 with respect to claims 1-20 have been fully considered and are persuasive. However, upon further consideration, the following new office action is provided in view of newly found prior art reference in order to expedite the prosecution of this application.

Claim Objections

Claims 2-12, and 14-20 are objected to because of the following informalities: The phrases " characterized by" and "characterized in that" in foreign or international based applications is intended to be the equivalent U.S. practice of –wherein the improvement comprises--. If that is applicant's intent please correct appropriately. Otherwise, examiner suggest replacement with transitional phrases such as open ended "comprising" or close ended "consisting". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-3, are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujita (US 6,516,217) in view of Modell et al. (US 5,813,987).

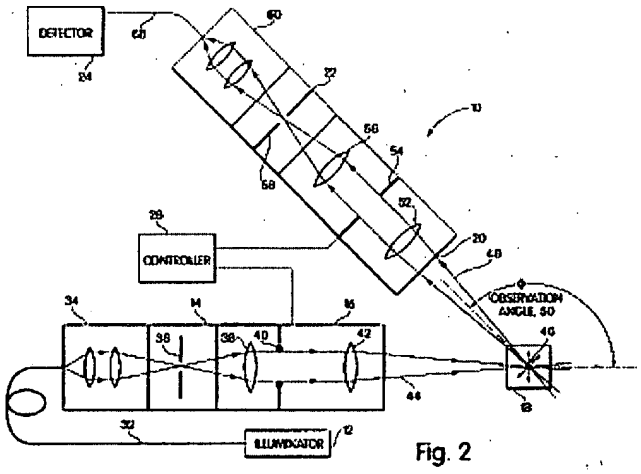


Fig. 2

The Tsujita patent teaches all the limitations of the claimed subject matter except for mentioning specifically that a system with an optical head being equipped with optical means adapted for converging the excitation signal coming out of said bundle into a subsurface analysis zone, and the same optical fiber or fibers of said bundle having served for carrying the excitation signal being used for detecting the signal emitted by said subsurface analysis zone.

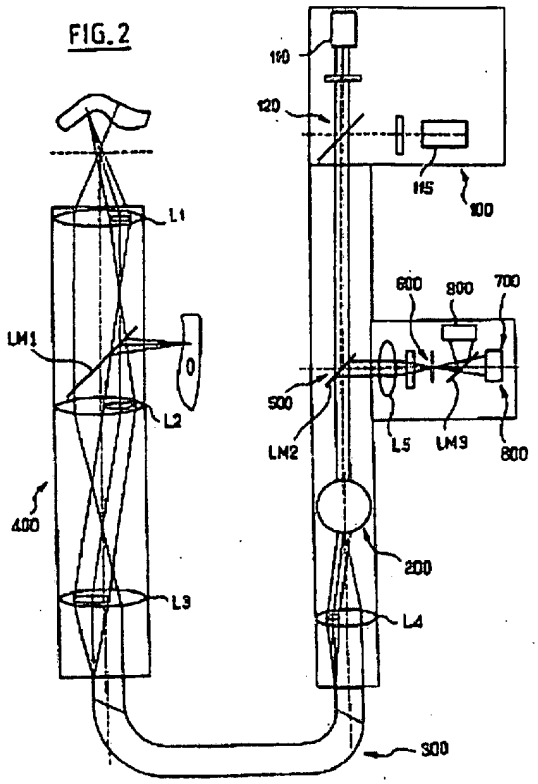
However, a system with an optical head being equipped with optical means adapted for converging the excitation signal coming out of said bundle into a subsurface analysis zone, and the same optical fiber or fibers of said bundle having served for carrying the excitation signal being used for detecting the signal emitted by said subsurface analysis zone are considered conventional in the art as evidenced by the teachings of Modell et al. (US 5,813,987).

The Modell et al. patent teaches a system with an optical head being equipped with optical means adapted for converging the excitation signal coming out of said bundle into a subsurface analysis zone, and the same optical fiber or fibers of said bundle having served for carrying the excitation signal being used for detecting the signal emitted by said subsurface analysis zone (see figure 2, elements 36 and 38, figures 3A-3B, col. 12, line 30-col.14, line 36).

Based on the above observations, for a person of ordinary skill in the art, modifying the system disclosed by Tsujita, with the above discussed enhancements would have been considered obvious because such modifications would provide a more accurate in vivo diagnostic information for tissues that are accessible optically.

Claims 4-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsujita (US 6,516,217) in view of Modell et al. (US 5,813,987) and further in view of Le Gargasson et al. (US 6,470,124).

FIG. 2



Tsujita teaches all the limitations of the claimed subject matter except for mentioning specifically a system for spectroscopy analysis characterized in that comprises a glass plate placed at the output of the optical fiber bundle and shared with the optical head, said plate being sufficiently thick to reject the parasitic parallel reflections at the output said fiber bundle, characterized in that the means for injecting into the optical fiber bundle has a wave front quality and a spatial distribution of the focal spot intensity adapted to the useful diameter of the fiber bundle, characterized in that the excitation source emits at a wavelength adapted to excite chosen endogenous fluorophores present biological tissues of the observed site, characterized in that the means for separating the wavelengths is a dichroic plate, characterized in that the means for spectroscopic analysis comprise a spectrograph and a means of coupling to

the slit of the spectrograph, characterized in that the means for coupling to the slit of the spectrograph comprises an achromatic optical means, characterized by means for rejecting placed upstream of the coupling means and adapted for eliminating the backscattered excitation wavelength, characterized by a lens placed upstream of the means for rejecting adapted for improving the signal-to-noise ratio, characterized in that comprises a means for adapting the size of the beam emitted by the excitation source to the useful diameter of the optical fiber bundle, characterized that it moreover comprises means for jointly producing a confocal image of the analysis zone, comprising: an illumination source, a detector of the return signal for analysis, a means for separating the illumination signal and said return signal, means for coupling the excitation beam for the spectroscopic analysis and the illumination beam for the confocal imaging, before introduction into the means for injecting into the optical fiber bundle, a means for rapid scanning one by one of the fibers situated upstream of the means for injecting into the fiber bundle and a system for spatial filtering at the input to the signal detector adapted for selecting the return signal originating from the fiber illuminated, the means for injecting into the fiber bundle having spatial distribution the focal spot intensity equal to the diameter of a fiber core, each fiber being illuminated alternately and in an addressed manner, characterized in that the means for coupling are placed upstream of the scanning means, characterized in that the illumination source pulsed laser diode, characterized that the illumination source has a wave front quality of the order of $\lambda/8$, characterized that the detector of the return signal is an avalanche photodiode, characterized in that the means for coupling the excitation signal for the spectroscopic

analysis and the illumination signal for the confocal imaging, comprise a dichroic plate, characterized in that the means for rapid scanning of the fibers one by one comprises a mirror resonating at a given frequency and a galvanometric mirror with a variable frequency, and two optical systems each constituted by lenses first adapted for conjugating the two mirrors then the galvanometric mirror and the fiber bundle input, characterized in that the spatial filtering system comprises a filtering hole size of which is such that it corresponds to the diameter of a fiber core, taking into account the magnification of the optical system, between the fiber bundle input and the filtering hole.

However, a system for spectroscopy analysis characterized in that comprises a glass plate placed at the output of the optical fiber bundle and shared with the optical head, said plate being sufficiently thick to reject the parasitic parallel reflections at the output said fiber bundle, characterized in that the means for injecting into the optical fiber bundle has a wave front quality and a spatial distribution of the focal spot intensity adapted to the useful diameter of the fiber bundle, characterized in that the excitation source emits at a wavelength adapted to excite chosen endogenous fluorophores present biological tissues of the observed site, characterized in that the means for separating the wavelengths is a dichroic plate, characterized in that the means for spectroscopic analysis comprise a spectrograph and a means of coupling to the slit of the spectrograph, characterized in that the means for coupling to the slit of the spectrograph comprises an achromatic optical means, characterized by means for rejecting placed upstream of the coupling means and adapted for eliminating the backscattered excitation wavelength, characterized by a lens placed upstream of the

means for rejecting adapted for improving the signal-to- noise ratio, characterized in that comprises a means for adapting the size of the beam emitted by the excitation source to the useful diameter of the optical fiber bundle, characterized that it moreover comprises means for jointly producing a confocal image of the analysis zone, comprising: an illumination source, a detector of the return signal for analysis, a means for separating the illumination signal and said return signal, means for coupling the excitation beam for the spectroscopic analysis and the illumination beam for the confocal imaging, before introduction into the means for injecting into the optical fiber bundle, a means for rapid scanning one by one of the fibers situated upstream of the means for injecting into the fiber bundle and a system for spatial filtering at the input to the signal detector adapted for selecting the return signal originating from the fiber illuminated, the means for injecting into the fiber bundle having spatial distribution the focal spot intensity equal to the diameter of a fiber core, each fiber being illuminated alternately and in an addressed manner, characterized in that the means for coupling are placed upstream of the scanning means, characterized in that the illumination source pulsed laser diode, characterized that the illumination source has a wave front quality of the order of $\lambda/8$, characterized that the detector of the return signal is an avalanche photodiode, characterized in that the means for coupling the excitation signal for the spectroscopic analysis and the illumination signal for the confocal imaging, comprise a dichroic plate, characterized in that the means for rapid scanning of the fibers one by one comprises a mirror resonating at a given frequency and a galvanometric mirror with a variable frequency, and two optical systems each constituted by lenses first adapted for

conjugating the two mirrors then the galvanometric mirror and the fiber bundle input, characterized in that the spatial filtering system comprises a filtering hole size of which is such that it corresponds to the diameter of a fiber core, taking into account the magnification of the optical system, between the fiber bundle input and the filtering hole are considered conventional in the art as evidenced by the teachings of Le Gargasson et al. (US 6,470,124) in figures 1 and 2.

The Le Gargasson et al. patent teaches a system for spectroscopy analysis characterized in that comprises a glass plate placed at the output of the optical fiber bundle and shared with the optical head (unit 400, L1), said plate being sufficiently thick to reject the parasitic parallel reflections at the output said fiber bundle (col. 7, lines 12-29), characterized in that the means for injecting into the optical fiber bundle has a wave front quality and a spatial distribution of the focal spot intensity adapted to the useful diameter of the fiber bundle (col. 7, lines 12-29), characterized in that the excitation source emits at a wavelength adapted to excite chosen endogenous fluorophores present biological tissues of the observed site (col. 8, lines 17-30), characterized in that the means for separating the wavelengths is a dichroic plate (see figure 2, element 120), characterized in that the means for spectroscopic analysis comprise a spectrograph and a means of coupling to the slit of the spectrograph (col. 14, lines 66-67, col. 7, lines 18-21), characterized by means for rejecting placed upstream of the coupling means and adapted for eliminating the backscattered excitation wavelength (see figure 2, col. 4, lines 19-31), characterized by a lens placed upstream of the means for rejecting adapted for improving the signal-to- noise ratio (col. 4, lines 38-46),

characterized in that comprises a means for adapting the size of the beam emitted by the excitation source to the useful diameter of the optical fiber bundle(col. 2, line 59 – col. 3, line 7), characterized that it moreover comprises means for jointly producing a confocal image of the analysis zone (col. 7, lines 29-34), comprising: an illumination source (figure 2, element 100), a detector of the return signal for analysis (col. 3, lines 51-60), means for coupling the excitation beam for the spectroscopic analysis and the illumination beam for the confocal imaging, before introduction into the means for injecting into the optical fiber bundle, a means for rapid scanning one by one of the fibers situated upstream of the means for injecting into the fiber bundle and a system for spatial filtering (figure 2, unit 600) at the input to the signal detector adapted for selecting the return signal originating from the fiber illuminated.

Moreover, the Modell et al. patent discloses in that the means for coupling to the slit of the spectrograph comprises an achromatic optical means (col. 18, line 63 – col. 19, line 22), a means for separating the illumination signal and said return signal (col. 6, line 65 – col. 7 line 2), the means for injecting into the fiber bundle having spatial distribution the focal spot intensity equal to the diameter of a fiber core (col. 5, lines 6-16), each fiber being illuminated alternately and in an addressed manner (see figure 10E), characterized in that the means for coupling are placed upstream of the scanning means, characterized in that the illumination source pulsed laser diode, characterized that the illumination source has a wave front quality of the order of $\lambda/8$, characterized that the detector of the return signal is an avalanche photodiode, characterized in that the means for coupling the excitation signal for the spectroscopic analysis and the

illumination signal for the confocal imaging, comprise a dichroic plate (see figure 10E), characterized in that the means for rapid scanning of the fibers one by one comprises a mirror resonating at a given frequency and a galvanometric mirror with a variable frequency (col. 22, lines 38-60), and two optical systems each constituted by lenses first adapted for conjugating the two mirrors then the galvanometric mirror and the fiber bundle input (see figures 6B and 7 and related description), characterized in that the spatial filtering system comprises a filtering hole size of which is such that it corresponds to the diameter of a fiber core, taking into account the magnification of the optical system, between the fiber bundle input and the filtering hole (see col. 12, line 9-24, col. 15, lines 24-45 and see figure 3C).

Based on the above observations, for a person of ordinary skill in the art, modifying the system disclosed by Tsujita, with the above discussed enhancements would have been considered obvious because such modifications would have enhanced the capabilities of the system, resulting in better depth resolution and image contrast.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John F. Ramirez whose telephone number is (571) 272-8685. The examiner can normally be reached on (Mon-Fri) 7:30 - 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian L. Casler can be reached on (571) 272-4956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JFR
12/01/06

ELENI MANTIS MERCADER
SUPERVISORY PATENT EXAMINER